

What is claimed is:

1. An apparatus for protecting an energized inductive device from an open circuit comprising:
 - a diode connected across terminals of the inductive device such that when the inductive device is normally energized, the diode is reversed-biased;
 - a spark gap connected in series with the diode; and
 - a housing enclosing the spark gap, the housing filled with an inert gas.
2. The apparatus according to claim 1 further comprising:
 - a resistance in series with the diode and the spark gap.
3. The apparatus according to claim 2 wherein the resistance comprises at least one resistor.
4. The apparatus according to claim 1 further comprising:
 - a charge valve operable to allow insertion of the inert gas into the housing.
5. The apparatus according to claim 4 further comprising:
 - a purge valve operable to allow at least one of venting and removal of the inert gas from the housing.
6. The apparatus according to claim 1 wherein the inductive device is an electromagnet.
7. The apparatus according to claim 6 further comprising:
 - a resistance in series with the diode and the spark gap.
8. The apparatus according to claim 7 wherein the resistance comprises at least one resistor.

9. The apparatus according to claim 7 further comprising:
a charge valve extending into the housing, the charge valve operable to allow insertion of the inert gas into the housing.

10. The apparatus according to claim 9 further comprising:
a purge valve extending into the housing, the purge valve operable to allow at least one of venting and removal of the inert gas from the housing.

11. The apparatus according to claim 1 further comprising:
an air pressure gauge extending into the housing, the air pressure gauge operable to measure the pressure of the inert gas.

12. A method of protecting an energized inductive device from an open circuit comprising the steps of:

connecting a diode across the terminals of the inductive device such that when the inductive device is normally energized, the diode is reversed-biased;
connecting a spark gap in series with the diode; and
enclosing the spark gap in a housing filled with an inert gas.

13. The method according to claim 12 further comprising the step of:

connecting a resistance in series with the diode and the spark gap.

14. The method according to claim 13 wherein the resistance comprises at least one resistor.

15. The method according to claim 12 further comprising the step of:

filling the housing with the inert gas using a charge valve extending into the housing.

16. The method according to claim 15 further comprising the step of:

extending a purge valve into the housing, the purge valve operable to allow at least one of venting and removal of the inert gas from the housing.

17. The method according to claim 1 wherein the inductive device is an electromagnet.

18. The method according to claim 17 further comprising the step of:

connecting a resistance in series with the diode and the spark gap.

19. The method according to claim 18 wherein the resistance comprises at least one resistor.

20. The method according to claim 17 further comprising the step of:

filling the housing with the inert gas using a charge valve extending into the housing.